THE AMERICAN JOURNAL OF PHYSIOLOGY

VOLUME 163

October–December 1950

BOARD OF PUBLICATION TRUSTEES

W. O. Fenn, *Chairman* R. F. Pitts Frank C. Mann

EDITORIAL BOARD

J. H. Comroe, Jr. F. G. Hall F. D. W. Lukens
Hallowell Davis W. F. Hamilton J. P. Quigley
H. E. Essex D. J. Ingle David Rapport
A. Gilman E. M. Landis H. P. Smith
D. P. C. Lloyd

Milton O. Lee, *Managing Editor*

THE AMERICAN PHYSIOLOGICAL SOCIETY
Washington, D. C.

COPYRIGHT 1950, BY
THE AMERICAN PHYSIOLOGICAL SOCIETY, INC.

610.5
A5
J86
P6

PRINTED IN THE UNITED STATES OF AMERICA
BY WAVERLY PRESS, INC., BALTIMORE, MARYLAND

DW

Contents of Volume 163

No. 1. OCTOBER 1950

CHEMICAL CHANGES PRODUCED IN ISOTONIC SOLUTIONS OF SODIUM SULFATE AND SODIUM CHLORIDE BY SMALL INTESTINE OF DOG
Gladys R. Bucher, Carl E. Anderson and Charles S. Robinson 1

COOLING AS A STIMULUS TO SMOOTH MUSCLES *John F. Perkins, Jr., Mao-Chih Li, Charles H. Nicholas, Warren H. Lassen and Phillip E. Gertler* 14

RELEASE OF GASTRIN IN RESPONSE TO BATHING PYLORIC MUCOSA WITH ACETYLCHOLINE *C. R. Robertson, Kenneth Langlois, Clement G. Martin, George Slezak and M. I. Grossman* 27

EFFECT OF CINCHOPHEN UPON EXTERNAL SECRETION OF PANCREAS
K. Hartiala, D. F. Magee and M. I. Grossman 34

EFFECT OF SURGICAL EXTIRPATION OF PYLORIC PORTION OF STOMACH ON RESPONSE OF FUNDIC GLANDS TO HISTAMINE AND URECHOLINE IN DOGS
Kenneth John Langlois and M. I. Grossman 38

LIPIDS OF LYMPH FOLLOWING FEEDING OF FAT: AN EXPERIMENTAL STUDY
Jesse L. Bollman, Eunice V. Flock, James C. Cain and John H. Grindlay 41

EFFECT OF DIETARY SUBSTANCES ON CHOLATE SYNTHESIS IN DOG
Frances Friend Coburn and John Annegers 48

INVESTIGATION OF HEPATIC FUNCTION BY CLEARANCE TECHNIQUES *Alvin E. Lewis* 54

PERIPHERAL CIRCULATORY AND METABOLIC REACTIONS ASSOCIATED WITH ERGOTOXINE HYPER- AND HYPOTHERMIA IN ADULT ALBINO RATS
A. R. Buchanan, Joseph A. Witt, J. E. Roberts and Leo C. Massopust, Jr. 62

ACTION OF INSULIN ON 'PERMEABILITY' OF CELLS TO FREE HEXOSES, AS STUDIED BY ITS EFFECT ON DISTRIBUTION OF GALACTOSE
R. Levine, M. S. Goldstein, B. Huddlestun and S. P. Klein 70

VITAMIN B_{12} CONTENT OF BLOOD FROM VARIOUS SPECIES
J. R. Couch, Orlando Olcese, P. W. Witten and R. W. Colby 77

ROLE OF THYROID IN METABOLIC RESPONSES TO COLD ENVIRONMENT
E. A. Sellers and S. S. You 81

EFFECT OF ENVIRONMENTAL TEMPERATURE AND STARVATION ON ADRENAL GLANDS OF WHITE-FOOTED MOUSE *John A. Sealander, Jr.* 92

CHANGES IN CIRCULATING EOSINOPHILES AND ADRENAL ASCORBIC ACID CONCENTRATION AFTER AGENTS ALTERING BLOOD SUGAR LEVELS AND AFTER SURGICAL CONDITIONS *Abraham Dury* 96

Spontaneous Activity in Rats Fed an Amino Acid-Deficient Diet
William Bevan, Jr., George T. Lewis, Walter L. Bloom and Allan T. Abess 104

Influence of O_2 Content of Inspired Air on Total Lung Volume
E. Peyser, A. Sass-Kortsák and F. Verzár 111

Role of Pulmonary Proprioceptive Reflexes in Suppression of Spontaneous Breathing During Electrophrenic Respiration
Paul O. Chatfield and Stanley J. Sarnoff 118

Adaptation to Histotoxic Anoxia *Ross Bell, Jr., and David W. Northup* 125

Initial Epicardial Negativity and Other Experimental Evidence Relative to Validity of Zonal Interference Theory
Thomas M. Durant and M. J. Oppenheimer 129

Effect of Auricular Fibrillation on Cardiac Output, Coronary Blood Flow and Mean Arterial Blood Pressure
René Wégria, Charles W. Frank, George A. Misrahy, Robert S. Sioussat, Leonard S. Sommer and George H. McCormack, Jr. 135

Evidences for More Than One Antidiuretic Substance in Pitressin
Elaine P. Ralli, Lawrence G. Raisz, Stephen H. Leslie, Mary E. Dumm and Bertram Laken 141

Accelerator Factors in Hemophilic Blood
William F. Orr, Jr. and Mary E. Gray 148

Volume of Distribution of Potassium and Its Alteration by Sympatholytic and Antihistaminic Drugs
Russell A. Huggins, Carlyle G. Breckenridge and Hebbel E. Hoff 153

Urine Flow and Solute Excretion of Hydropenic Dog Under 'Resting' Conditions and During Osmotic Diuresis *Clark D. West and S. Rapoport* 159

Excretion of Sodium and Potassium During Osmotic Diuresis in Hydropenic Dog *S. Rapoport and Clark D. West* 175

Oxygen Tension and pH of Renal Cortex in Acute Ischemia and Chronic Hypertension *Norman S. Olsen and Henry A. Schroeder* 181

Effect of Dietary Restriction of Salt and Protein on Blood Pressure of Hypertensive Rats
H. G. Danford, D. G. Dieter, J. W. Christofferson and R. C. Herrin 190

Effects of Oxine, Carbostyril and Quinoline on Frog Nerve
Frederick Crescitelli 197

Effect of Lymphoid Necrosis Due to Nitrogen Mustard and Roentgen Irradiation on Neuromuscular Function of Hypophysectomized Animals
Clara Torda and Harold G. Wolff 201

Action of Cobra Venom and Cardiotoxin on Gastrocnemius-Sciatic Preparation of a Frog *Nirmal K. Sarkar and Sushil R. Maitre* 209

No. 2. NOVEMBER 1950

104 Effect of Temperature Change on Round-Window Response in the Hamster
Lawrence Kahana, Walter A. Rosenblith and Robert Galambos 213

111 Glucose Space of Body *Arne N. Wick, Douglas R. Drury and Eaton M. MacKay* 224

Electrotonic Potentials Elicited by Threshold Stimuli From Sheath-Free
118 Nerve at Different Temperatures *Gordon M. Schoepfle* 229

125 Ion Binding in Muscle Homogenates *H. Burr Steinbach* 236

Effect of Iodoacetate on Changes in Muscular Latency Induced by
Activity *Alexander Sandow and A. G. Karczmar* 247

129 Factors Relating to Heart Size in the Intact Animal
W. F. Hamilton, J. W. Remington and W. F. Hamilton, Jr. 260

Cardiac Output in Rat at Normal and at High Altitudes and Its Relation-
ship to Gas Embolism *F. R. Blood, D. L. Smith and F. E. D'Amour* 268

135 Excitability of Mammalian Ventricle Throughout the Cardiac Cycle
Oscar Orias, Chandler McC. Brooks, Eustace E. Suckling,
Jerome L. Gilbert and Arthur A. Siebens 272

141 Formation of Bradykinin in Anaphylactic and Peptone Shock
W. T. Beraldo 283

148 Pressor Pathways Not Blocked by Tetraethylammonium
Walter A. Freyburger, Carl C. Gruhzit and Gordon K. Moe 290

153 Pregnancy Test Utilizing Frogs and Toads *William Chu* 294

Survival in Circulation of Growth and Adrenocorticotrophic Hormones as
159 Evidenced by Parabiosis
Donald C. Van Dyke, Miriam E. Simpson, Choh Hao Li and Herbert M. Evans 297

175 Anti-Insulin and Diabetogenic Actions of Purified Anterior Pituitary
Growth Hormone *R. C. De Bodo, M. Kurtz, A. Ancowitz and S. P. Kiang* 310

181 Action of Cortisone on Cardiovascular-Renal Effects of Desoxycorti-
costerone Acetate
Sydney M. Friedman, Constance L. Friedman and Miyoshi Nakashima 319

190 Cytochemical Study of Adrenal Cortex of Rat Under Salt Stress
Habeeb Bacchus 326

Sites and Nature of Protein Anabolism Stimulated by Testosterone Pro-
197 pionate in Rat
Charles D. Kochakian, Evangeline Robertson and Mary N. Bartlett 332

Influence of Fat in Diet Upon Nitrogen Balance and Liver Regeneration
201 *Charles S. Rogers, Colin C. Ferguson, Charles E. Friedgood and Harry M. Vars* 347

Role of Adrenal Cortex in Liver Regeneration
209 *Charles E. Friedgood, Harry M. Vars and Joan W. Zerbe* 354

IDENTITY AND SPECIFICITY OF FROG WATER-BALANCE PRINCIPLE OF POSTERIOR PITUITARY EXTRACT
Wilbur H. Sawyer, Dorothy F. Travis and Norman G. Levinsky 364

TOXICITY OF SEA WATER IN MAMMALS *Carolyn B. Albrecht* 370

ROLE OF UREASE IN GASTRIC MUCOSA
David Glick, Edith Zak and Richard Von Korff 386

PYRIDOXINE AND EXPERIMENTAL X-RADIATION INJURY IN RATS
M. L. MacFarland, M. V. Peters, R. M. Ballantyne and E. W. McHenry 394

CHEMICAL AGENTS INFLUENCING SURVIVAL TO 'EXPLOSIVE' ANOXIA
F. W. Stemler, J. E. Wiebers and W. A. Hiestand 400

PROPERTIES OF TRANSSULFURASE RESPONSIBLE FOR CONVERSION OF CYANIDE TO THIOCYANATE *Jack P. Saunders and Williamina A. Himwich* 404

CHANGES IN PLASMA OF RAT DURING FASTING AND INFLUENCE OF GENETIC FACTORS UPON SUGAR AND CHOLESTEROL LEVELS *Henry I. Kohn* 410

EFFECT OF FEEDING AN 'ANIMAL PROTEIN FACTOR' CONCENTRATE TO YOUNG LAMBS *R. W. Colby, F. A. Rau and J. R. Couch* 418

EFFECT OF RENAL ARTERIAL CONSTRICTION ON EXCRETION OF SODIUM AND WATER
William D. Blake, René Wégria, Henry P. Ward and Charles W. Frank 422

STUDIES ON RENAL PRESSOR MECHANISM AND ON VASCULAR REACTIVITY DURING DEPRESSOR RESPONSE TO ACUTE INFLAMMATION IN DOGS
W. Hwang, S. Rodbard, J. Stamler, G. Gros and S. L. Weinberg 430

REABSORPTION OF BROMIDE BY KIDNEY *Robert L. Wolf and G. S. Eadie* 436

COMPARISON OF DIRECT WITH INDIRECT RENAL BLOOD FLOW, EXTRACTION OF INULIN AND DIODRAST, BEFORE AND DURING ACUTE RENAL NERVE STIMULATION *R. S. Study and R. E. Shipley* 442

MEASUREMENT AND SIGNIFICANCE OF URINARY APPEARANCE TIME IN DOG
Pablo A. Morales, Charles H. Crowder, Alfred P. Fishman, Morton H. Maxwell and Domingo M. Gomez 454

CLEARANCES OF SOME PROTEINS BY DOG KIDNEY
Margaret E. Marshall and H. F. Deutsch 461

No. 3. DECEMBER 1950

EXCITABILITY CYCLE OF MAMMALIAN AURICLE
Chandler McC. Brooks, Oscar Orias, Jerome L. Gilbert, Arthur A. Siebens, Brian Hoffman and Eustace E. Suckling 469

POSITIONAL CHANGES OF HEART AND THEIR EFFECTS ON ELECTROKYMOGRAPHIC RECORDINGS *Gordon C. Ring, A. Sokalchuk, G. J. Navis and H. W. Rudel* 475

BLOCKADE OF EPINEPHRINE-INDUCED CARDIOACCELERATION IN FROG
Mark Nickerson and George M. Nomaguchi 484

EFFECTS OF DIPHENYLHYDANTOIN SODIUM (DILANTIN SODIUM) AND PHENOBARBITAL SODIUM UPON ECTOPIC VENTRICULAR TACHYCARDIA IN ACUTE MYOCARDIAL INFARCTION *A. Sidney Harris and Robert H. Kokernot* 505

DIRECT COMPARISON IN DOGS OF PLASMA VOLUME MEASURED WITH T-1824 AND WITH ANTIGENS *M. I. Gregersen, A. A. Boyden and J. B. Allison* 517

EFFECTS OF MASSIVE TRANSFUSION AND HEMORRHAGE ON BLOOD PRESSURE AND FLUID SHIFTS *Arthur C. Guyton, John E. Lindley, Robert N. Touchstone, Charles M. Smith and Hugh M. Batson, Jr.* 529

EFFECTS OF CONTROL OF CARDIAC WORK UPON CORONARY FLOW AND O_2 CONSUMPTION AFTER SYMPATHETIC NERVE STIMULATION *R. W. Eckstein, M. Stroud, III, R. Eckel, C. V. Dowling and W. H. Pritchard* 539

EFFECTS OF HEMOLYZED BLOOD ON CORONARY BLOOD FLOW *J. R. Chambliss, J. Demming, K. Wells, W. W. Cline and R. W. Eckstein* 545

ACTION OF TETRAETHYLAMMONIUM ON PRESSOR RESPONSE TO ASPHYXIA *Walter A. Freyburger, Carl C. Gruhzit, Barbara R. Rennick and Gordon K. Moe* 554

RELATION OF MUSCULAR FATIGUE IN ADRENALECTOMIZED DOG TO INADEQUATE CIRCULATORY ADJUSTMENT *M. S. Goldstein, E. R. Ramey and Rachmiel Levine* 561

CIRCULATORY CHANGES DURING PROCESS OF AROUSAL IN HIBERNATING HAMSTER *Paul O. Chatfield and Charles P. Lyman* 566

CIRCULATORY TRANSFER OF P^{32} TO SKELETAL MUSCLES UNDER VARIOUS EXPERIMENTAL CONDITIONS *D. L. Gilbert, C. D. Janney and H. M. Hines* 575

FACTORS AFFECTING RATE OF COOLING IN IMMERSION HYPOTHERMIA IN DOG *Richard C. Wolff and Kenneth E. Penrod* 580

THERMAL REGULATION DURING ACCLIMATIZATION IN HOT, DRY (DESERT TYPE) ENVIRONMENT *Ludwig W. Eichna, Charles R. Park, Norton Nelson, Steven M. Horvath and Edward D. Palmes* 585

CHANGES IN POTASSIUM AND SODIUM CONCENTRATIONS IN LIVER SLICES ACCOMPANYING INCUBATION IN VITRO *Edmund B. Flink, A. Baird Hastings and Jeanette K. Lowry* 598

FACTORS AFFECTING SYNTHESIS OF ACETYLCHOLINE BY BRAIN SLICES *Hugh McLennan and K. A. C. Elliott* 605

COMBUSTION OF C^{14} LABELED METHANOL IN INTACT RAT AND ITS ISOLATED TISSUES *Grant R. Bartlett* 614

INHIBITION OF METHANOL OXIDATION BY ETHANOL IN RAT *Grant R. Bartlett* 619

EFFECT OF BARBITURATE ANESTHESIA ON POTASSIUM METABOLISM OF RABBIT AND DOG *James M. Stewart* 622

DISTRIBUTION OF PARENTERALLY ADMINISTERED LITHIUM IN PLASMA, BRAIN AND MUSCLE OF RATS *Virginia D. Davenport* 633

METABOLISM OF RAT HEART SLICES, WITH SPECIAL REFERENCE TO EFFECTS OF TEMPERATURE AND ANOXIA
Geraldine J. Fuhrman, Frederick A. Fuhrman and John Field, 2nd 642

EFFECT OF X-RAY IRRADIATION ON ALKALINE PHOSPHATASE OF PLASMA AND TISSUES OF RATS *Stephan Ludewig and Alfred Chanutin* 648

FORMATION OF GLUCOSE BY KIDNEY
Douglas R. Drury, Arne N. Wick and Eaton M. MacKay 655

SEX DIFFERENCE IN PROTEINURIA IN RAT
Alvin L. Sellers, Howard C. Goodman, Jessie Marmorston and Margaret Smith 662

BIOCHEMICAL, CELLULAR, AND BACTERIOLOGIC CHANGES IN THORACIC DUCT LYMPH OF DOGS EXPOSED TO TOTAL BODY IRRADIATION
Crawford S. Brown, Esther Hardenbergh and John L. Tullis 668

DISTRIBUTION OF BLOOD IN RABBIT'S KIDNEY
W. Insull, Jr., I. G. Tillotson and J. M. Hayman, Jr. 676

MECHANISM BY WHICH ACTH INCREASES EXCRETION OF URATE
Meyer Friedman and Sanford O. Byers 684

FACTORS INFLUENCING BILE FLOW IN DOG AND RAT *Donald L. Cook, Doris A. Beach, Robert G. Bianchi, W. E. Hambourger and D. M. Green* 688

AMERICAN PHYSIOLOGICAL SOCIETY PROCEEDINGS, FALL MEETING 1950 695